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SOME INTERESTING MOUNDS.

BY GERARD FOWKE.

This paper is devoted solely to a statement of results derived from personal excavations and researches in Pennsylvania, Mississippi, and Ohio.

PENNSYLVANIA.

There seem to be few mounds east of the Alleghanies of the same character as those found in the Mississippi valley. They extend, however, well toward the foot of the mountains upon their western side. Many exist in the vicinity of Pittsburg, some quite large, showing that the fertile bottoms and easy communication by the three rivers were well known to the aborigines.

Within the corporate limits of Monongahela City stood a mound nine feet high and two hundred feet in circumference at the base. It had evidently been erected in honor of a single individual, whose extended skeleton lay on the original surface of the ground at the center of the tumulus. On his breast was a symmetrical gorget of hammered copper, similar to that from Michigan, measuring three by four and a half inches. It was quite smooth, with incurved sides and rounded corners. There were also several fragments of very thin copper about the skull, so corroded that their form could not be determined. Under this skeleton lay another, crowded into a circular hole barely large enough to receive it. A thin layer of gray, clayey earth, such as is always formed from the decay of sod when covered by a mass of earth, extended unbroken over the lower skeleton, proving it had been buried a considerable time before the mound was erected.

When the mound had been carried to half its final height, work was suspended for at least two years, and a little thicket of blackberry and other vines and shrubs had grown over it. These had been burned off when the work was resumed; their charred remains were abundant. Several skeletons were found at different points in the mound, about two feet below the upper surface. These, no doubt, were the remains of modern Indians.

Near the mouth of Mingo creek, two miles below the town above mentioned, were three stone graves, located upon a headland with steep, almost precipitous, sides, which extends from the high hills bordering on the stream nearly to the river's edge. A quantity of small stones had been piled up, as in making a macadamized road, to the thickness of one foot, forming a narrow ellipse more than a hundred feet in length. On this the graves were made. The roots of trees had so displaced the stones composing them that the exact method of their construction was difficult to ascertain. As near as could be determined, large flat rocks had been placed for the extended bodies to rest upon, several rows of similar rocks being set on edge around these, and many large stones thrown on above. This manner of burial is supposed to have been peculiar to the Shawnees.

On a plateau on Pigeon creek, five miles above its mouth, is an ancient burial place. The level space on top of the plateau and the sides that slope down to the water are quite free from stones on the surface. In plowing deeper than usual a large stone was disturbed; this being removed, human bones were found beneath it. Search was made for other graves, and more than a hundred have been discovered. The method of burial was the same in all; the surface earth was removed, a small hole like an inverted truncated cone excavated in the subsoil, and the body placed therein, lying on the left side, with the knees drawn up to the chin and the heels touching the hips. A large flat rock was brought from the creek and laid over the body, the edges resting on the sides of the hole. The excavated earth was then thrown back. A pot, some perforated panther teeth, and a few other relics were discovered during the work; usually the bodies had nothing placed with them. Nearly all the skeletons were of children from two to ten years of age; not a dozen were found of older persons.

The skeleton found under the mound was buried in the same way as those in the cemetery described, except that no stone was placed above it, none suitable for the purpose being found in the vicinity. If due to the same people, it indicates that the graves themselves, which by some are considered to be of Mingo or Shawnee origin, are in reality older than the mound.

A mound near Shire Oaks, not more than four feet in height, contained the skeleton of a large adult, in a sitting position with his

legs extended. Lying at his feet were several spear-heads, a highly polished syenite celt seven and a half inches long, a very thin and symmetrical leaf-shaped knife seven and three-fourth inches in length, made of translucent chalcedony having a variety of beautiful and delicate colors, and a pipe of banded green slate. The last was an excellent representation of a panther; the stem-hole was in the back, the tobacco cavity in the neck, behind the head. Thus, while in use, the head would be held upward instead of forward in the natural position, as in all other effigy pipes known to the writer. The tail was curved in such a way as to be grasped by all the paws of the animal, and the portion between the hind feet and the junction of the tail with the body afforded a handle by which the smoker could hold it securely. Holes had been drilled for eyes, in which were set small shell disks with perforations to represent the pupils, giving a very life-like effect.

MISSISSIPPI.

In the southern part of Union county, a few miles north of Pontotoc, is a group of earthworks interesting not only in themselves, but also from being mentioned in De Soto's chronicles; at least, such is the conclusion of those who have traced his route through this region. He crossed the Tallahatchee somewhere within a few miles of this place, near the site of an Indian town; there being no other locality that answers the description so closely, it is believed he beheld the works when they were occupied.

The group is on a peninsula between two small streams that unite a mile away; two straight walls of earth, nearly parallel, cross the level space from bluff to bluff; a broken line along either bank connects them at the ends, forming a hexagonal enclosure. Around the outer base of the wall is a ditch, now almost obliterated. Within this space—an area of almost seventy acres—are eleven mounds. The largest is a truncated pyramid, the base being an unsymmetrical rhomboid. A graded passage-way extends from its top to the ground at a point several yards from the base. The sides of the mound, despite the erosion it has undergone, are still so steep that ascent is almost impossible, except along this grade. It is twenty-eight feet high, and the level top comprises a little more than a quarter of an acre. The other mounds are of the usual conical or dome shape, varying from sixty-five to two hundred feet in diameter, most of them having been much reduced in height by cultivation.

All except the pyramid were thoroughly excavated, but only two are worthy of record. In one, which had been fully ten feet high, was a saucer-shaped basin, six feet across, of fine, clean sand in layers of one-fourth of an inch. Its thickness at the center was six inches, and the margin was a feather-edge all around. The bottom was three feet above the original surface. On this, among flint chips and pottery fragments, were two or three small pieces of glass, and a silver plate stamped with the royal coat of arms of Castile and Leon. The form of the glass and the evident use of the badge or ornament prove the deposit was not made by whites. The former was apparently broken from a thick brown bottle and rudely chipped into the form of gun-flints, something no white man would think of doing. The badge, which was quite thin, had a hole ground (not cut or punched) in one end, as if it had been rubbed on, or with, a rough stone. This was doubtless to allow of suspension. Neither bones nor any other remains than those mentioned lay on the sand.

There were indications of the earth having been disturbed, prior to the time of this examination, down to the level at which these articles were found; so it is possible they may have been deposited by subsequent dwellers in this vicinity. But the sand itself had not been touched; the thin layers extended smooth and unbroken from edge to edge, and no matter what changes may have taken place in the upper portion of the mound, this altar, if it may be so termed, was in the position and condition in which it had been left by the people who had built the mound. Below it were two or three pieces of glass similar to those above. So it may be safely said this mound was built after white men had been in the region and before its builders learned that flint and glass differ somewhat in their fitness for certain uses.

Silver trinkets of various kinds are frequently found in this vicinity on and about mounds which have been nearly leveled by cultivation.

The second mound was partially built of red and yellow clays and black soil, with a base diameter of forty feet. In many places the differing colors showed very plainly the amount of earth carried at each load, which would average a peck. The small flattened masses were as distinct as if painted.

At this stage work was suspended for several years; then a large amount of earth was added to the mound. The material was not the same as that first used; very little red clay appeared, but white

clay, sand, and black muck from the creek bottoms made the bulk of the addition.

Instead of being piled over the whole mound, the new deposits were made on the eastern side from top to bottom, extending only so far around the north and south sides as was necessary to preserve the circular outline of the base. Before any addition was made, however, the surface soil was removed and several holes, each about three feet deep and from fourteen to eighteen inches in diameter, dug in the space over which the mound was to extend. These were filled to the top with a slimy gray matter, of the consistence of thin mud, but very sticky. Nothing was found in any of them except a piece of a human skull.

In one corner of the enclosure is an area of between two and three acres, much darker than the surrounding soil, which excavations proved to be a cemetery. With one skeleton was a piece of glass, probably once a mirror, an iron pipe, some wrought nails, and several small silver ornaments cut and stamped in various patterns.

It was noticed by the early settlers that timber grew to the ditch as large as elsewhere, but within that line the growth was small. Bushes and small trees were plentiful, but nowhere within the wall was there a tree large enough to be made into rails. This fact, the articles found in the cemetery, and the glass in the mound, compel the belief that this town-site is quite modern.

OHIO.

Among the interesting features of Ohio earthworks are the so-called "Graded Ways." Several exist in different parts of the State. One which has attracted great attention on account of the immense amount of labor apparently expended in its construction is at Piquet-ton. The words "apparently expended" are used advisedly; for despite the many elaborate descriptions, it is only a natural formation, due to the action of running water while the terraces were forming. The only artificial thing about it is a low wall along the bank on each side.

Extending for two miles down the river from here are many mounds, single or grouped. Three of them may be described.—

The first is sixteen feet high, somewhat flattened on top. It is composed of two kinds of earth: first, an interior mound, or core, of dark earth from a creek bottom, and over this a clayey loam from the upland.

Shortly before the mound was begun three large fires were kindled at equal distances from the center and from each other. Each bed of the resulting ashes was from five to six feet across, and contained many fragments of bones and mussel-shells burned until almost destroyed. Some large logs had been used as fuel; one of them, of oak, a foot in diameter, had been burned on two fires at once; a charred end still lay on the edge of each pile of ashes, while the decayed wood reached across the intervening space. No relics were found in these ashes; but on the top of one pile lay three little packages of copper beads, fifty-three in all, which had been wrapped first in cloth, then in linden bark, and finally in skin or leather, and thrown on the ash-heap after the fire had died down. The enveloping substances were well preserved. Close to them lay a portion of a human femur, the joint of which had entirely decayed, but so much of the shaft as remained was solid and firm. It had been cut all around at its middle point, the nicks or cuts reaching half-way to the marrow cavity and then broken off. The marks of the cutting tool were such as would be left on a hard stick by a dull knife. The other extremity of the bone could not be found. Above this was a very thin layer of bright red ocher covering a space somewhat more than three feet in diameter, but not at all regular in outline.

Just outside the triangle formed by the fire-beds was a mass of very fine, soft, black material, intermixed with which were many fragments of wood and shreds of bark. A burial had been made with some care; but of the body nothing remained except two small pieces of skull and part of one femur. Only the central part of the latter was found, no trace of either end being discoverable. These bones were perfectly fresh in appearance, as much so as if the flesh had not been removed from them a week.

From this level to the top of the black core was a mass of deposits difficult to decipher. The earth was loose and soft and contained much ashes, many fragments of wood, the holes left by poles or logs, and thoroughly decayed remains of skeletons. Just above the center of the base a small pen had been built, the sides about two feet high, the top sloping like the roof of a house. At two places near by, bodies had been interred between layers of wood. The whole core seemed to be the result of many burials at various times and in various ways, each having its own covering; the subsequent decay of the wood and settling of the earth produced a confused mingling that destroyed all hope of learning anything definite about them.

Near this mound was one heaped over a grave dug down into the gravel which underlies the soil everywhere in this region. A body, extended on the back, lay in the grave. Both valves of a small mussel shell, each perforated, a single very large mussel shell, a slate gorget, four pearls, several teeth, some of them molars of the bear, others canines of the wolf, all with the roots ground off to the enamel, were found with the remains. The skeleton measured six feet four inches in length; the bones were uncommonly thick and heavy, and the processes for the attachment of the muscles very large and prominent. By its side lay the bones of a child not more than three or four years of age, which had on its breast a small slate gorget.

When the bodies had been placed in position earth was thrown on them to the level of the surrounding surface; the removed gravel was then spread over them in a thin layer twelve feet across, and over this the mound was made, extending beyond the grave for twenty feet on every side. This was the only mound ever opened by the writer in Ohio in which the skeleton was found so deep beneath the natural surface.

In a mound not over four feet high were numerous traces of bone, including pieces of seven different skulls, all so decayed as to prevent any examination. Fifteen feet from the center was a mass of burned earth six feet in diameter, with a maximum thickness of five inches. Near one edge of this was a hole a foot in diameter and three feet deep. The sides were smooth and burnt from top to bottom. The lower two feet consisted of ashes and charcoal, while the remaining space contained a fine dark earth which had settled in from above. Between this and the middle of the burned area was a small pile of human bones burned to cinders; no single piece over two inches long was found. Among them were two large flint knives or spear-heads, slightly broken, and several round pebbles the size of a hen's egg. Over the bones, but not reaching to the edge of the burned earth on any side, was a pile of ashes several inches thick.

But one conclusion is to be drawn from this: A large post had been set deep in the ground, a person fastened to it, and a fire kept up under and around him for many hours, until a small basket would have held all the bones that remained unconsumed. These, with the ashes, were raked into a pile. Meantime the post had burned

to the bottom, leaving its marks on the sides of the hole. The spears and pebbles had no doubt been used to increase the victim's sufferings.

So much was plain ; but if he was an enemy, why was the mound built over the place of his torture ? If he was a deceased member of the tribe undergoing cremation, why was the post planted in the ground ? In either event, what significance had the bodies deposited in the mound, none of them being nearer than within twelve feet of the pyre ?

Three miles west of Piketon is a hill rising abruptly from the water's edge and separated on every side by deep ravines from the hills adjacent to it. More than two hundred "cup-stones" have been found on its surface. At each end of its level top is a mound. In the construction of one, the first step was to cover the ground with bark over a space twenty-five feet in diameter. On this had been placed the remains of many individuals. Skulls, vertebræ, limbs, and ribs were mingled in a manner that could not have resulted in any other way than from tossing in promiscuously the dismembered remains denuded of the flesh. Only one entire skeleton was found ; it lay on its left side, doubled into the smallest compass, at one edge of the bone deposit. The layer of bones was almost circular in outline and fifteen feet from side to side. A covering of bark had been placed over them ; on this a mound of large rocks had been built to a height of four feet, and this formed the core to an earth mound, which was carried six feet higher. Burials of this character are very rare in southern Ohio.

In the vicinity of Waverly are several mounds of varying sizes. In one of them, which was originally over twenty feet high, a careful examination revealed nothing above the base in the whole structure. Sunk in the soil beneath were a great many small holes from six to fourteen inches in diameter and from twenty to thirty inches deep. Some contained only very fine earth. In some were bones of birds, fishes, and various small mammals, along with mussel and snail shells ; others yielded only ashes and charcoal. None showed any marks of fire on the sides, and no articles of interest or value were in them. They are utterly irregular in their arrangement.

At the center of the mound was a single skeleton extended at full length on the back. The great weight of earth had broken and flattened every part of it, not even a bone of the hand or foot being

entire. The right femur lay across one of the small holes, which was filled with ashes, animal bones, and mussel shells. Of the teeth, ten were missing, and only nine of those remaining were free from traces of decay previous to death. They were less worn than those usually found in mounds, indicating a medium age for the individual. No relics of any sort were found.

Close to this mound is one only three feet high. The central figure little resembled, physically, the giant inhumed in the gravel at Piketon, being not more than five feet in height. His bones, however, were very thick, the muscle attachments extraordinary in their development. His short stature was not due to any deformity, all his parts being in due proportion. The skull was large, quite thick, of great breadth behind and above the ears, with the lower part of the forehead projecting to an unusual degree.

A large fire had been kept burning a considerable time near where his remains were placed. This was in the performance of some rite or ceremony before the body had been removed to the spot, for the skull lay at the margin of the ash-bed.

In a third mound were the skeletons of two adults, at full length, on the back and in contact. Above them had been piled a dome-shaped mass of earth, two feet high and fifteen feet in diameter. Over this a layer of charcoal having a uniform thickness of two inches was spread. Near the head of one skeleton, midway between the original surface and the charcoal covering, were the bones of a child so young that the crowns of the teeth had not yet come through the bone. It was nearly a foot higher than the other skeletons. Over the charcoal additional earth had been heaped, until the mound reached an elevation of six feet.

The most interesting mound here was one fifteen feet in height. It was on a spot which had been the site of a building. Posts six inches in diameter had been set in pairs three feet apart around its sides, and a shallow ditch dug to carry away the roof water. Other posts at intervals in the interior had supported the roof. The building measured forty feet from side to side.

Near the center was a grave in which were two skeletons, one of a man who, to judge by the slightly worn condition of his teeth, was not more than thirty years of age at the time of his death ; the other of a woman, much older, some of whose teeth were worn down to the roots. The crowns of the two lower middle incisors had been cut nearly off at the lower edge of the enamel. The opening thus

made was about large enough to admit a pin, and extended three-fourths of the way across each tooth. There was no trace of decay, nor had the openings closed in the least. For all indications to the contrary, the operation, whatever its purpose, may have been performed after death.

The grave was a rectangular pit measuring six by ten feet, and fourteen inches deep, with rounded corners. The skeleton of the female lay in the center, with the other at its left side. Both were extended at full length on the back. There was ample room at the opposite side for another body.

On one side of the pit was a bed of ashes over six inches thick in some parts, thirteen feet in length, and six feet in width. At one side this mass extended into the pit, reaching from the knees of the skeletons to the end of the grave, more than two feet beyond the skulls, which were completely covered by the ashes, and consequently in an excellent state of preservation.

After the bodies had been placed in the grave a small mound of black muck was piled over the bodies to a height of five feet. This did not extend beyond the bounds of the pit. Finally the mound was completed with earth from the field around.

No trace of the timbers of the house appeared above the original surface of the ground. This structure had been entirely removed, and may have furnished the fuel for the fire from which the unusually large ash-bed resulted.

METAL-WORKING IN NEW GUINEA.—The Papuans of Geelvink Bay, according to J. L. Van Hasselt in *Mittheilungen der geographischen Gesellschaft zu Jena*, have considerable skill in welding iron and steel and casting silver. A man who wishes to learn the blacksmith's art has to go through certain mysterious formalities. The pupil, by anointing himself with oil and having an incantation pronounced over him, becomes invulnerable; so that neither can the flying particles of red-hot iron hit him nor a careless blow of the hammer hurt him. They have probably learned these usages from their Mohammedan instructors in the art of metal-working, who are as superstitious as the Papuans.

JOHN MURDOCH.